



Warm up Grade 6

Date: Dec. 4



1) Without multiplying, choose the correct product for each multiplication question. Explain your choice each time. Multiply to check

| Question            | Possible Products |        |              |
|---------------------|-------------------|--------|--------------|
| a) $0.072 \times 8$ | 5.76              | 0.0576 | <u>0.576</u> |
| b) $0.365 \times 4$ | <u>1.46</u>       | 0.146  | 0.0146       |

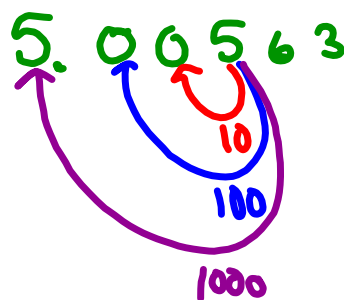
Estimate  
 $7 \text{ hundredths} \times 8$   
 $56 \text{ hundredths}$   
 Stop in hundred  
 $0.\underline{5} \underline{6}$

$0.3 \times 4$   
 $3 \text{ tenths} \times 4$   
 $12 \text{ tenths} = 1.2$

2) Given 5.00563, what are the place values for each "5" and how

ones      thousandths

many times larger is one to the other?



5 ones is 1000 times larger than 5 thousandths

Practice

Homework Solutions

1. Use Base Ten Blocks.  
Multiply.

- a)  $0.6 \times 4$       b)  $0.12 \times 3$       c)  $0.21 \times 2$   
d)  $0.34 \times 5$       e)  $0.215 \times 3$       f)  $0.408 \times 2$

a)  $\overset{.}{0.6} \times 4$   

$$\begin{array}{r} \overset{.}{0.6} \\ \times 4 \\ \hline 2.4 \end{array}$$
 6 tenths x 4 is 24 tenths  
 $6 \times 4 = 24$

or estimate

0.6 is close to 1 whole

$1 \times 4 = 4$  so product is close to 4

but over estimate.

b)  $0.12 \times 3$   

$$\begin{array}{r} 0.12 \\ \times 3 \\ \hline 0.36 \end{array}$$
 estimate  
 0.12 is close to 1 tenth  
 1 tenth x 3 = 3 tenths  
 so product is close to 0.3  
 but under estimate.

c)  $0.21 \times 2$   

$$\begin{array}{r} 0.21 \\ \times 2 \\ \hline 0.42 \end{array}$$
 estimate  
 0.21 is close to 2 tenths  
 2 tenths x 2 = 4 tenths  
 so product is close to 0.4  
 but under estimate.

d)  $\overset{.}{0.34} \times 5$   

$$\begin{array}{r} \overset{.}{0.34} \\ \times 5 \\ \hline 1.70 \end{array}$$
 estimate  
 0.34 is close to 3 tenths  
 3 tenths x 5 = 15 tenths  
 so product is close to 1.5  
 but under estimate.

e)  $0.215 \times 3$   

$$\begin{array}{r} 0.215 \\ \times 3 \\ \hline 0.645 \end{array}$$
 estimate  
 0.215 is close to 2 tenths  
 2 tenths x 3 = 6 tenths  
 so product is close to 0.6  
 but under estimate.

e)  $0.408 \times 8$   

$$\begin{array}{r} 0.408 \\ \times 8 \\ \hline 3.216 \end{array}$$
 estimate  
 0.408 is close to 4 tenths  
 4 tenths x 8 = 32 tenths  
 so product is close to 3.2  
 but under estimate.

2. Copy this place-value chart.  
Multiply. Record each product in the chart.

|    | Ones | Tenths | Hundredths | Thousandths | Ten-Thousandths |
|----|------|--------|------------|-------------|-----------------|
| a) | 0    | 0      | 3          | 5           |                 |
| b) | 3    | 7      | 8          |             |                 |
| c) | 0    | 1      | 4          | 5           |                 |

- a)  $0.005 \times 7$       b)  $0.42 \times 9$       c)  $0.029 \times 5$   
d)  $0.0328 \times 9$       e)  $0.276 \times 6$       f)  $0.1036 \times 8$

a)  $0.005 \times 7$   

$$\begin{array}{r} 0.005 \\ \times 7 \\ \hline 0.035 \end{array}$$
 $5 \times 7 = 35$

b)  $0.42 \times 9$   

$$\begin{array}{r} 0.42 \\ \times 9 \\ \hline 3.78 \end{array}$$
 4 tenths x 9 is 36 tenths  
 3.6

c)  $0.029 \times 5$   

$$\begin{array}{r} 0.029 \\ \times 5 \\ \hline 0.145 \end{array}$$
 $\overset{.}{29} \times 5 = 145$

d)  $0.0328 \times 9$   

$$\begin{array}{r} 0.0328 \\ \times 9 \\ \hline 0.2952 \end{array}$$
 3 hundredths x 9 is 27 hundredths  
 close to 0.27

3 hundredths x 5 is 15 hundredths  
 so close to = 0.15

e)  $0.276 \times 6$   

$$\begin{array}{r} 0.276 \\ \times 6 \\ \hline 1.656 \end{array}$$
 $\overset{.}{276} \times 6 = 1656$   
 close to 3 tenths x 6 is 18 tenths  
 close to 1.8 tenths

f)  $0.48 \times 2$   

$$\begin{array}{r} 0.48 \\ \times 2 \\ \hline 0.96 \end{array}$$
 $\overset{.}{48} \times 2 = 96$

close to 5 tenths x 2 is 10 tenths  
 close to 1.0 tenths

Homework Solutions

3. Multiply. Describe your strategies.

- a)  $0.9 \times 3$       b)  $0.25 \times 6$       c)  $0.018 \times 4$   
 $0.09 \times 3$        $0.025 \times 6$        $0.0018 \times 4$   
 $0.009 \times 3$        $0.0025 \times 6$        $0.00018 \times 4$

What patterns do you see?

a.  $9 \times 3 = 27$  (est)

$0.9 \times 3 = 2.7$   
 $0.09 \times 3 = 0.27$   
 $0.009 \times 3 = 0.027$

b.  $25 \times 6 = 20 \times 6 = 120$   
 $5 \times 6 = \frac{30}{150}$

$0.25 \times 6 = 1.50$   
 $0.025 \times 6 = 0.150$   
 $0.0025 \times 6 = 0.0150$

4. Shona cut a ribbon into 8 equal lengths to finish sewing her Fancy Shawl Regalia. Each piece was 0.158 m long.

- a) How long was the ribbon before Shona cut it?  
 b) How many cuts did she make?

4a)  $0.158 \text{ m} \times 8$   
 $= 1.264 \text{ m}$

$\begin{array}{r} 16 \\ 158 \\ \times 8 \\ \hline 1264 \end{array}$



Woman Dancing an Aboriginal Fancy Dance

0.158 close to 0.2 (2 tenths)

2 tenths  $\times 8$  is 16 tenths (1.6)

b) 7 cuts gives 8 pieces

| Juice             | Vitamin C per glass (g) |
|-------------------|-------------------------|
| Pure Orange Juice | 0.054                   |
| Pure Apple Juice  | 0.0009                  |

- a) Stefan drinks a glass of pure orange juice. How much Vitamin C does Stefan get from orange juice each week?  
 b) Stefan went to Sasamat Outdoor Centre's overnight camp for one week. He drank a glass of pure apple juice each morning with his breakfast. How much Vitamin C did Stefan get from apple juice that week?

a) 1 week has 7 days  
 vitamin C in 1 glass is 0.054 g

$\begin{array}{r} 2 \\ 54 \\ \times 7 \\ \hline 378 \end{array}$

$0.054 \times 7 = 0.378$

0.05 is close to 1 tenth 0.1

1 tenth  $\times 7$  is 7 tenths

$0.1 \times 7 = 0.7$

over estimate

Stefan gets 0.378 g of vitamin C each week from orange juice

Apple juice

b) 1 week has 7 days  
 vitamin C in 1 glass is 0.0009 g

$\begin{array}{r} 9 \\ \times 7 \\ \hline 63 \end{array}$

$0.0009 \times 7 = 0.0063$

0.0009 is close to 1 thousandths (0.001)

1 thousandths  $\times 7$  is 7 thousandths

$0.001 \times 7 = 0.007$

over estimate

Stefan gets 0.0063 g of vitamin C that week from apple juice



6. Without multiplying, choose the correct product for each multiplication question.

### Homework Solutions

Explain your choice each time. Multiply to check.

| Question             | Possible Products |         |          |
|----------------------|-------------------|---------|----------|
| a) $0.063 \times 9$  | 5.67              | 0.567 ✓ | 0.0567   |
| b) $0.349 \times 7$  | 2.443 ✓           | 0.2443  | 0.024 43 |
| c) $0.0078 \times 5$ | 0.39              | 0.039 ✓ | 0.0039   |

a) 0.06 is close to 0.1

$$0.1 \times 9 = 0.9$$

b) 0.349 is close to

$$3 \text{ tenths} \times 7$$

$$= 21 \text{ tenths}$$

$$2.1$$

c) 0.0078

is close to 0.01  
(1 hundredths)

1 hundredths  $\times$   
5 is 5

hundredths

close to 0.05



7. Multiply as you would whole numbers. Estimate to place the decimal point.

a)  $0.359 \times 5$

b)  $0.0112 \times 9$

c)  $0.083 \times 4$

d)  $0.89 \times 6$

e)  $0.0063 \times 7$

f)  $0.097 \times 8$

$$\begin{array}{r} 359 \times 5 = 300 \times 5 = 1500 \\ 50 \times 5 = 250 \\ 9 \times 5 = 45 \\ \hline 1795 \end{array}$$

$$0359 \times 5 = 1.795$$

$$\begin{array}{r} 0112 \times 9 = 100 \times 9 = 900 \\ 10 \times 9 = 90 \\ 2 \times 9 = 18 \\ \hline 1008 \end{array}$$

$$0.0112 \times 9 = 0.1008$$

c)  $0.083 \times 4$

$$80 \times 4 = 320$$

$$3 \times 4 = 12$$

$$432$$

$$0.083 \times 4 = 0.432$$

d)  $0.89 \times 6$

$$80 \times 6 = 480$$

$$9 \times 6 = 54$$

$$0.89 \times 6 = 5.34$$

8. A student said that since  $11 \times 5 = 55$ , then  $0.0011 \times 5$  is 0.55.

Is the student's reasoning correct?

Give reasons for your answer.

No since 11 ten-thousandths

so

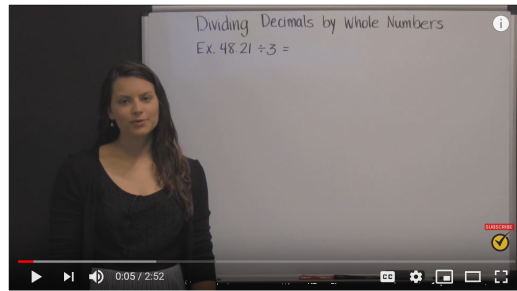
11 ten-thousandths  $\times$  5

is 55 ten-thousandths

$$\underline{\quad} \cdot \underline{\quad} \underline{\quad} \underline{\quad} \underline{5} \underline{5}$$

### Reflect

How can you use your knowledge of multiplication facts to help you multiply a decimal less than 1 by a 1-digit whole number?



Dividing Decimals by Whole Numbers

This is the one I use



Dividing decimals by a whole number

27.76  
Dividend

÷

8  
Divisor

Very similar to long division.

- Divide the decimal number by considering it as a whole number by the given whole number.

$$8 \overline{) 27.76}$$

Always estimate to see if the quotient is reasonable

- Mark the decimal point in the quotient such that it has the same number of decimal places as in the decimal number (dividend).

$$27.76 \div 8$$

$$\begin{array}{r}
 3.47 \\
 8 \overline{) 27.76} \\
 \underline{-24} \phantom{0} \\
 37 \\
 \underline{-32} \\
 56 \\
 \underline{-56} \\
 0
 \end{array}$$

Then divide normally

Try this one

No remainders but decimal parts





$$9.467 \div 5$$

$$\begin{array}{r}
 1.8934 \\
 5 \overline{) 9.4670} \\
 \underline{-5} \phantom{0} \\
 44 \\
 \underline{-40} \\
 46 \\
 \underline{-45} \\
 17 \\
 \underline{-15} \\
 20 \\
 \underline{-20} \\
 0
 \end{array}$$

Can always add zeros to the end of decimals, and it does not change the number.

You Try

Divide the following, with long division.

 **D**ivide ✓  
 **M**ultiply ✓  
 **S**ubtract ✓  
 **B**ring Down ✓  
 **R**epeat ✓

a)

$$49.504 \div 4$$

$$\begin{array}{r}
 12.376 \\
 4 \overline{) 49.504} \\
 \underline{-4} \phantom{0} \phantom{0} \phantom{0} \\
 09 \phantom{0} \phantom{0} \phantom{0} \\
 \underline{-8} \phantom{0} \phantom{0} \phantom{0} \\
 15 \phantom{0} \phantom{0} \phantom{0} \\
 \underline{-12} \phantom{0} \phantom{0} \phantom{0} \\
 30 \phantom{0} \phantom{0} \phantom{0} \\
 \underline{-28} \phantom{0} \phantom{0} \phantom{0} \\
 24 \phantom{0} \phantom{0} \phantom{0} \\
 \underline{-24} \phantom{0} \phantom{0} \phantom{0} \\
 0
 \end{array}$$

b)  $35.95 \div 2$

$$\begin{array}{r}
 17.975 \\
 2 \overline{) 35.950} \\
 \underline{-2} \phantom{0} \phantom{0} \phantom{0} \\
 15 \phantom{0} \phantom{0} \phantom{0} \\
 \underline{-14} \phantom{0} \phantom{0} \phantom{0} \\
 19 \phantom{0} \phantom{0} \phantom{0} \\
 \underline{-18} \phantom{0} \phantom{0} \phantom{0} \\
 15 \phantom{0} \phantom{0} \phantom{0} \\
 \underline{-14} \phantom{0} \phantom{0} \phantom{0} \\
 10 \phantom{0} \phantom{0} \phantom{0} \\
 \underline{-10} \phantom{0} \phantom{0} \phantom{0} \\
 0
 \end{array}$$

METHOD 2 (I pick method...)

$$24.72 \div 6$$

Uses multiples you know

Repeated subtraction of multiples of 6.

Record off to the side the multiple

|   |       |     |
|---|-------|-----|
| 6 | 2472  |     |
|   | - 600 | 100 |
|   | 1872  |     |
|   | - 600 | 100 |
|   | 1272  |     |
|   | - 600 | 100 |
|   | 672   |     |
|   | - 600 | 100 |
|   | 72    |     |
|   | - 60  | 10  |
|   | 12    |     |
|   | - 12  | 2   |
|   | 0     | 412 |

Now use estimation to determine where the decimal is placed.

$$24 \div 6 = 4$$

so

$$24.72 \div 6 = 4.12$$

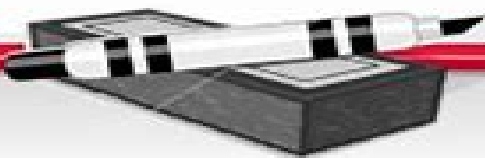


page 106

Class / Homework

#1)  $ab$

#2) Show estimation numbers  $abcd$



Riley)

**Practice**

1. Use Base Ten Blocks to divide.

a)  $6.25 \div 5$

b)  $4.24 \div 4$

c)  $1.68 \div 3$

d)  $3.9 \div 6$

2. The decimal point is missing in each quotient.

Use estimation to place each decimal point.

★  $8.2 \div 2 = 41$

★  $3.81 \div 3 = 127$

c)  $1.992 \div 8 = 249$

★  $9.45 \div 5 = 189$

e)  $11.916 \div 9 = 1324$

★  $62.8 \div 8 = 785$

3. Estimate each quotient. Which strategies did you use?

a)  $26.34 \div 8$

b)  $15.27 \div 3$

c)  $2.304 \div 4$

d)  $5.8 \div 8$

e)  $8.088 \div 6$

f)  $2.316 \div 2$



4. Divide. Multiply to check your answers.

★  $27.025 \div 5$   
d)  $16.072 \div 8$

b)  $3.42 \div 6$   
★  $30.9 \div 5$

★  $7.735 \div 7$   
f)  $3.438 \div 6$

Step 1: Estimate

$$25 \div 5 = 5$$

Step 3:

$$27.025 \div 5 = 5.405$$

Step 2:  
Actual  
Answer

|   |       |          |
|---|-------|----------|
| 5 | 27025 | 5 x 4000 |
|   | 20000 |          |
| - | 7025  | 5 x 1000 |
|   | 5000  |          |
| - | 2025  | 5 x 400  |
|   | 2000  |          |
| - | 25    | 5 x 5    |
|   | 25    |          |
| - | 0     |          |

Step 4:  
Check by Multiplying

$$5.405 \times 5 = 27.025$$



5. Estimate to choose the correct quotient for each division question.

|    | Question       | Possible Quotients |       |       |
|----|----------------|--------------------|-------|-------|
| a) | $8.124 \div 6$ | 1.354              | 13.54 | 135.4 |
| b) | $37.92 \div 3$ | 0.1264             | 1.264 | 12.64 |
| c) | $7.624 \div 8$ | 0.953              | 9.53  | 95.3  |

6. Aqpiq Peter is a young Inuit speed skater from Nunavut. He is one of 3 First Nations athletes being showcased for the 2010 Vancouver Olympics. At practice, Aqpiq skated 2.75 km in 5 min. About how far did Aqpiq skate in 1 min?





7. Eric cycled 2.25 km in 5 min.  
 Josie cycled 2.72 km in 8 min.  
 Who travelled farther in 1 min?  
 Show your work.



8. Sharma paid \$58.50 to board her cat at a kennel in Yellowknife for 5 days.  
 Her friend Miles paid \$12.50 each day to board his cat at a different kennel for 5 days.  
 Who paid the lesser amount?  
 Explain how you know.



9. The decimal point in some of these quotients is in the wrong place. Identify the mistakes, then write each quotient with the decimal point in the correct place.

- a)  $44.8 \div 8 = 0.56$                       b)  $14.805 \div 5 = 2.961$   
 c)  $3.15 \div 6 = 5.25$                       d)  $8.127 \div 1 = 0.8127$



10. A student divided 1.374 by 4 and got 3.435.  
 a) Without dividing, how do you know the answer is incorrect?  
 b) What do you think the student did wrong?  
 c) What is the correct answer? How can you check?

11. Write a story problem that can be solved by dividing 14.28 by 3.  
 Trade problems with a classmate and solve your classmate's problem.

13. In good weather, Hannah rides her bike to school and back each day.  
 One week, Hannah rode her bike on 4 days.  
 That week, Hannah rode 10.832 km in total.  
 The following week, she rode her bike all 5 days.  
 How far did Hannah ride the second week?

